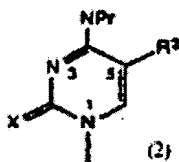


This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

Claims 1-138 (Canceled).

139. (Previously Presented) A method of detecting the presence, absence or amount of a particular single-stranded DNA or RNA or a particular target duplex in a sample comprising:  
selecting an oligomer having at least one base of formula (2):



wherein each X is independently O or S;

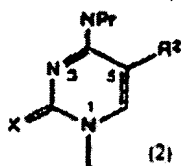
R<sup>2</sup> is a group comprising at least one pi bond connected to the carbon atom attached to the base; and

Pr is (H)<sub>2</sub> or a protecting group; and

using said oligomer to detect said DNA, RNA or target duplex.

140. (Previously Presented) The method of 139 wherein said oligomer is used for quantitating the amount of said DNA, RNA or target duplex in said sample.

141. (Previously Presented) A method of performing a polymerase chain reaction (PCR) to amplify a target sequence comprising including in a PCR assay mixture an oligomer having at least one base of formula (2):



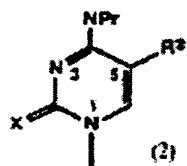
wherein each X is independently O or S;

$R^2$  is a group comprising at least one pi bond connected to the carbon atom attached to the base; and

Pr is  $(H)_2$  or a protecting group; and  
effecting a polymerase chain reaction to amplify said target sequence.

142. (Previously Presented) The method of claim 141 further including a Taq polymerase in said PCR assay mixture.

143. (Previously Presented) A method of performing a nucleic acid amplification protocol to amplify a target nucleic acid comprising including in an assay mixture an oligomer having at least one base of formula (2):



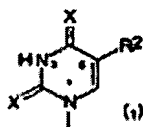
wherein each X is independently O or S;

$R^2$  is a group comprising at least one pi bond connected to the carbon atom attached to the base; and

Pr is (H)<sub>2</sub> or a protecting group; and  
effecting a protocol to amplify said target nucleic acid.

144. (Previously Presented) A method of claim 143 wherein said protocol includes hybridization of said oligomer to said target nucleic acid.

145. (Currently Amended) A method of detecting the presence, absence or amount of a particular single-stranded DNA or RNA or a particular target duplex in a sample comprising:  
selecting an oligomer having at least one base of formula (1):



wherein each X is independently O or S;

R<sup>2</sup> is cyano; C<sub>2-12</sub> 1-alkenyl; C<sub>2-12</sub> 1-alkynyl; a C<sub>2-12</sub> heteroaromatic group containing 5-6 ring atoms in which one to three of the ring atoms is N, S or O; phenylethynyl; 2-, 3- and 4-pyridine-ethynyl; 2-, 4-, and 5-pyrimidine-ethynyl; triazine-ethynyl; 2-, 4-, or ~~and~~ 5-pyrimidinyl; 2-, 4-, or ~~and~~ 5-oxazolyl-ethynyl; 2-, 4-, or ~~and~~ 5-thiazolyl-ethynyl; 1-methyl-2-imidazolyl; 2- or ~~and~~ 4- imidazolyl; 2-, 4- or ~~and~~ 5-oxazolyl; 2-, 4-, or ~~and~~ 5-imidazolyl-ethynyl; 2-, 3- or ~~and~~ 4-pyridinyl; 2- or ~~and~~ 3-thienyl-ethynyl; 2- or ~~and~~ 3-furanyl-ethynyl; 2- or ~~and~~ 3-pyrrolyl-ethynyl; 2- or ~~and~~ 3-thienyl; 2-, 4-, or ~~and~~ 5-oxazolyl; 2- or ~~and~~ 3-furanyl; 2- or ~~and~~ 3-pyrrolyl; propenyl; vinyl; bromovinyl; -C≡C-Z where Z is H, C<sub>1-10</sub> alkyl, C<sub>1-10</sub> haloalkyl (with 1-6 halogen atoms), or C<sub>1-10</sub> heteroalkyl (with 1-3 heteroatoms); 3-buten-1-ynyl; 3-methyl-1-butynyl; 3,3-dimethyl-1-butynyl; 1,3-pentadiynyl; 1-butynyl; ethynyl; and

[Pr is (H)<sub>2</sub> or a protecting group; and]

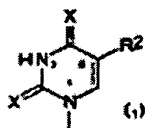
using said oligomer to detect said DNA, RNA or target duplex.

146. (Previously Presented) The method of 145 wherein said oligomer is used for quantitating the amount of said DNA, RNA or target duplex in said sample.

147. (Previously Presented) The method of claim 145 wherein  $R^2$  is  $C_{2-8}$  1-alkenyl.

148. (Previously Presented) The method of claim 145 wherein  $R^2$  is  $C_{2-8}$  heteroaromatic.

149. (Currently Amended) A method of performing a polymerase chain reaction (PCR) to amplify a target sequence comprising including in a PCR assay mixture an oligomer having at least one base of formula (1):



wherein each X is independently O or S;

$R^2$  is cyano;  $C_{2-12}$  1-alkenyl;  $C_{2-12}$  1-alkynyl; a  $C_{2-12}$  heteroaromatic group containing 5-6 ring atoms in which one to three of the ring atoms is N, S or O; phenylethynyl; 2-, 3- and 4-pyridine-ethynyl; 2-, 4-, and 5-pyrimidine-ethynyl; triazine-ethynyl; 2-, 4-, or ~~and~~ 5-pyrimidinyl; 2-, 4-, or ~~and~~ 5-oxazolyl-ethynyl; 2-, 4-, or ~~and~~ 5-thiazolyl-ethynyl; 1-methyl-2-imidazolyl; 2- or ~~and~~ 4- imidazolyl; 2-, 4- or ~~and~~ 5-oxazolyl; 2-, 4-, or ~~and~~ 5-imidazolyl-ethynyl; 2-, 3- or ~~and~~ 4-pyridinyl; 2- or ~~and~~ 3-thienyl-ethynyl; 2- or ~~and~~ 3-furanyl-ethynyl; 2- or ~~and~~ 3-pyrrolyl-ethynyl; 2- or ~~and~~ 3-thienyl; 2-, 4-, or ~~and~~ 5-oxazolyl; 2- or ~~and~~ 3-furanyl; 2- or ~~and~~ 3-pyrrolyl; propenyl; vinyl; bromovinyl;  $-C\equiv C-Z$  where Z is H,  $C_{1-10}$  alkyl,  $C_{1-10}$  haloalkyl (with 1-6 halogen atoms), or  $C_{1-10}$  heteroalkyl (with 1-3 heteroatoms); 3-buten-1-ynyl; 3-methyl-1-butynyl; 3,3-dimethyl-1-butynyl; 1,3-pentadiynyl; 1-butynyl; ethynyl; and

[Pr is (H)<sub>2</sub> or a protecting group; and]

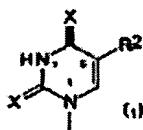
effecting a polymerase chain reaction to amplify said target sequence.

150. (Previously Presented) The method of claim 149 further including a Taq polymerase in said PCR assay mixture.

151. (Previously Presented). The method of claim 149 wherein R<sup>2</sup> is C<sub>2-8</sub> 1-alkenyl.

152. (Previously Presented) The method of claim 149 wherein R<sup>2</sup> is C<sub>2-8</sub> heteroaromatic.

153. (Currently Amended) A method of performing a nucleic acid amplification protocol to amplify a target nucleic acid comprising including in an assay mixture an oligomer having at least one base of formula (1):



wherein each X is independently O or S;

R<sup>2</sup> is cyano; C<sub>2-12</sub> 1-alkenyl; C<sub>2-12</sub> 1-alkynyl; a C<sub>2-12</sub> heteroaromatic group containing 5-6 ring atoms in which one to three of the ring atoms is N, S or O; phenylethynyl; 2-, 3- and 4-pyridine-ethynyl; 2-, 4-, and 5-pyrimidine-ethynyl; triazine-ethynyl; 2-, 4-, or and 5-pyrimidinyl; 2-, 4-, or and 5-oxazolyl-ethynyl; 2-, 4-, or and 5-thiazolyl-ethynyl; 1-methyl-2-imidazolyl; 2- or and 4- imidazolyl; 2-, 4- or and 5-oxazolyl; 2-, 4-, or and 5-imidazolyl-ethynyl; 2-, 3- or and 4-pyridinyl; 2- or and 3-thienyl-ethynyl; 2- or and 3-furanyl-ethynyl; 2- or and 3-pyrrolyl-ethynyl; 2- or and 3-thienyl; 2-, 4-, or and 5-oxazolyl; 2- or and 3-furanyl; 2- or and 3-pyrrolyl; propenyl; vinyl; bromovinyl; -C≡C-Z where Z is H, C<sub>1-10</sub> alkyl, C<sub>1-10</sub> haloalkyl (with 1-6 halogen

**DOCKET NO.:** GLIS-0143  
**Application No.:** 10/024,818  
**Office Action Dated:** April 22, 2004

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37 CFR § 1.116**

atoms), or C<sub>1-10</sub> heteroalkyl (with 1-3 heteroatoms); 3-buten-1-ynyl; 3-methyl-1-butynyl; 3,3-dimethyl-1-butynyl; 1,3-pentadiynyl; 1-butynyl; ethynyl; and  
[Pr is (H)<sub>2</sub> or a protecting group; and]  
effecting a protocol to amplify said target nucleic acid.

154. (Previously Presented) A method of claim 153 wherein said protocol includes hybridization of said oligomer to said target nucleic acid.

155. (Previously Presented) The method of claim 153 wherein R<sub>2</sub> is C<sub>2-8</sub> 1-alkenyl.

156. (Previously Presented) The method of claim 153 wherein R<sub>2</sub> is C<sub>2-8</sub> heteroaromatic.